

### **Introduction**

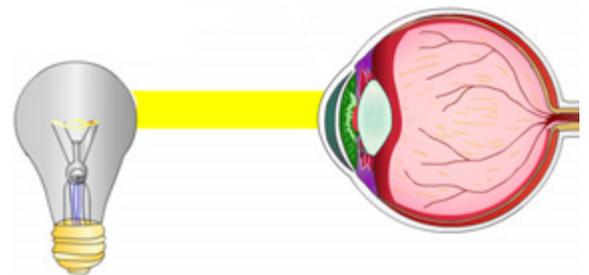
Patients with diabetes are more likely to have eye problems that can lead to blindness. Many of these eye diseases can be prevented or delayed through good diabetes management.

When they occur, these diseases can be treated easily if discovered early. This reference summary explains how diabetes affects the eyesight and what diabetic patients can do to prevent these eye problems from happening.

### **How The Eye Works?**

Light first hits the cornea of the eye, which allows light to enter the eye through the pupil. The iris controls the amount of light that enters the eye by changing the size of the pupil.

As light passes through the pupil, it enters a clear lens, like the lens of a camera, which focuses the light onto the back of the eye. The focused light passes through a clear gel called “vitreous” until it reaches the back of the eye.



The back of the eye is known as the retina. The retina changes light signals into electric signals, sent through the optic nerve to the brain, which translates these signals into images we see.

The central part of the retina is known as the “macula” and is responsible for sharp, central vision. The rest of the retina, known as the periphery, is important for peripheral vision.

Like other parts of the body, the retina needs blood to function adequately. Blood flows to the retina through small blood vessels.

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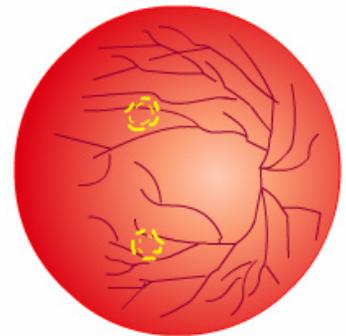
## Diabetic Retinopathy

Patients with diabetes are more likely to develop eye problems. Insulin dependent patients are more likely to have eye problems than patients who are not insulin dependent. Doctors cannot predict who will have eye complications and who will not.

Diabetes weakens the body's blood vessels. The blood vessels of the eyes are small. When they become weak, they leak, burst, or become blocked.

The weakening of the blood vessels of the eyes is known as diabetic retinopathy. "Retinopathy" means disease of the retina. It is the most serious eye condition caused by diabetes.

Blood vessels of the retina may leak if they are weak. This can cause swelling in the retina, which in turn can cause loss of vision. Blood vessels in the retina can also get completely clogged and lead to the death of parts of the retina. The part of vision that is lost depends on the location of the clogged blood vessels.



Diabetic Retinopathy

To bypass clogged arteries, new arteries start sprouting to bridge the clogged artery. These blood vessels are very weak. They can crowd the retina, then rupture and bleed in it. This sprouting of the blood vessels is also known as "proliferation" of the blood vessels.

When weak blood vessels of the retina rupture, the bleeding can be limited to the retina or it can go into the vitreous. Bleeding in the retina damages the retina and can cause vision loss.

Bleeding in the vitreous makes it difficult for light to reach the retina. It causes clouded and blurry vision. When new, weak blood vessels grow to bypass blocked vessels, they may also grow into the vitreous.

Scar tissue from a damaged retina may also grow in the vitreous. The vitreous may then pull on the retina, causing severe vision loss and possibly blindness.

If you have diabetic retinopathy, your doctor may refer to two types of diabetic retinopathy. "Nonproliferative retinopathy" refers to the problems caused by the leakage of fluid into the retina or by the clogging of the blood vessels.

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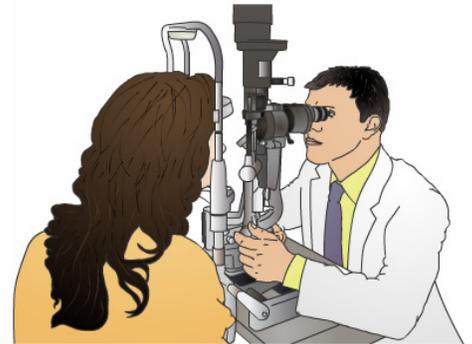
The second term, “proliferative retinopathy,” refers to the stage when the new blood vessels sprout abnormally, bleed, or rupture.

Usually diabetic retinopathy progresses from nonproliferative retinopathy to proliferative retinopathy. This progression can take a few years.

### **Treating Diabetic Retinopathy**

The best treatment for retinopathy is prevention. Good control of blood sugar level and blood pressure, healthy eating, and exercising can help prevent or delay retinopathy. Regular checkups with the eye doctor are essential for identifying early signs of retinopathy.

Laser surgery is available to slow the development of proliferative retinopathy. Laser surgery may also prevent further bleeding. When bleeding in the vitreous occurs, eye surgery to remove the vitreous is also available.

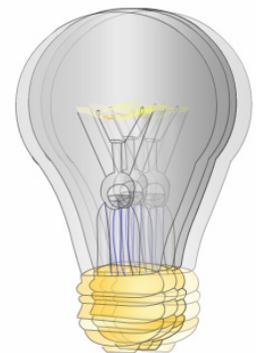


### **Other Eye Problems**

Diabetic patients can have other eye problems such as blurred vision, cataract, and glaucoma.

People with diabetes may have blurry vision when their blood sugar level is out of control. This blurry vision is temporary and disappears after blood sugar level is back to normal.

All people can get cataract, especially when they get older. However, diabetic patients may get cataract earlier than people without diabetes. Clouding of the lens causes cataract. The symptom of cataract is blurred vision. Cataract can be fixed by minor surgery.



Glaucoma is another disease of the eye that is more common in diabetic patients. Glaucoma occurs when the pressure inside the eye is increased. Its symptom is reduced peripheral vision, or side vision. Glaucoma can be treated with medication, usually with eye drops.

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## Summary

People with diabetes are more likely to develop eye problems such as retinopathy, cataract, and glaucoma. Prevention through successful management of diabetes helps prevent and delay these eye diseases. Management of diabetes consists of the following:

- Controlling the blood sugar level
- Eating healthy
- Exercising
- Keeping good hygiene
- Learning about diabetes

When discovered early, these eye problems are easier to treat. For this reason, diabetic patients should check with their eye doctors regularly. Ask your doctor for additional resources regarding diabetic retinopathy and other eye diseases.



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